

AIR FORCE ENERGY PROGRAM

PROCEDURAL MEMORANDUM (AFEPPM) 96-1

1 June, 1996

AIR FORCE ENERGY MANAGEMENT PLAN

This memorandum is the implementation plan for Air Force philosophy, organizational relationships, responsibilities, and procedures for implementing and managing the Air Force Energy Program as stated in Air Force Policy Directive 23-3, Energy Management. AFEPPM 80-4, Air Force Ride Sharing Program; AFEPPM 86-1, Energy Management - Goals; AFEPPM 86-2, Energy Management Monetary Awards Program; AFEPPM 86-14, Energy Security in Air Force Facilities; AFEPPM 88-11, Air Force Energy Plan - Facility Energy Portion; AFEPPM 86-20, Vehicle Energy efficiency Goals; AFEPPM 86-21, Efficiency in Aircraft Operations; AFEPPM 87-1, Gasohol Use in Motor Vehicles and AFEPPM 90-2, Facility Energy Program Reporting are rescinded.

1. **Applicability.** This plan applies to all Air Force activities and installations in regards to implementing programs to meet energy and water use goals and objectives set by Public Laws, Executive Orders, and the Department of Defense (DOD).

2. **Background.** The Air Force energy management program supports implementation of the long-term National Energy Strategy to further an energy future that is secure, efficient, and environmentally sound. The energy future requires all Air Force personnel to pursue new and smarter ideas for implementing management strategies designed to meet the assigned goals by fiscal years 2000, and 2005. The Air Force program is a coordinated effort that encompasses all functional areas and applies to all aspects of mission operations and support.

2.1. **Directive Guidance.** The Energy Policy Act of 1992 (Public Law 102-486) and Executive Order (EO) 12902, 8 Mar 94, established energy goals through FY05 (See Attachment 1 for details).

2.1.1. Public Law 102-486 adds water conservation to the energy program, but establishes no specific goals. The Air Force Water Management Program is covered in a separate AFEPPM.

2.2. **Reducing Import Dependence.** The United States' use of crude oil in the 1990s will increase our reliance on imported foreign crude oil to over 50 percent, up from just over 31 percent in 1985. This increased demand, coupled with the instability in the Persian Gulf region, makes it clear that the need for an effective energy program is just as important now as it was during the oil crises of the 1970s. Air Force efforts must strive to minimize petroleum use in facilities and vehicles while improving energy efficiency and lifecycle costeffectiveness. While great strides in energy conservation were made in the 1970s and 1980s, a renewed commitment to energy conservation and energy efficiency is needed to reduce this growing dependency on foreign crude oil. Everyone must now commit themselves to including energy efficiency practices into their way of doing business and invent innovative methods to conserve energy. The Air Force must manage energy resources to ensure that energy reduction goals are met or exceeded.

2.2.1. Air Force Energy Consumption. See Attachment 2 for a summary of Air Force energy consumption from FY85 through FY95.

2.3. **Energy Conservation Program Resources.** Money is a key factor in the implementation of energy conservation programs. The financial resources available to the Air Force in the 1990s will be considerably less than those of the 1980s. The pressures of budget reductions and force reductions, while maintaining a high readiness posture, make further conservation of energy a

necessity. Our challenge is to use the available funding wisely to support initiatives that both improve energy efficiency and reduce consumption.

2.4. Support of Air Force Environmental Goals. Reducing energy consumption is directly linked to the United States' commitment to be the world leader in environmental quality. The need to protect our environment provides further incentive for the Air Force to conserve energy. Energy conservation is a win-win scenario. We save both energy and money while still preserving the nation's security and protecting the environment. This goal only requires change, not sacrifice.

3. Air Force Energy Program Goals and Objectives.

3.1. Air Force Energy Program Goals. The Air Force energy program is structured to achieve the reduction goals mandated by The Energy Policy Act of 1992 (Public Law 102-486) and Executive Order (EO) 12902. See Attachment 1.

3.2. Air Force Energy Program Objectives. The primary program objective is to meet or exceed mandated reduction goals without degrading military readiness, safety, and mission effectiveness or quality of life. This will be accomplished by implementing management actions, investing in energy conservation technology and equipment, and creating information and recognition programs to create energy conservation and management awareness throughout the Air Force.

3.2.1. Increase Energy Efficiency in all Energy-Use Areas. This objective will be achieved by research and development programs for more efficient fuels and more efficient engines for aircraft and vehicles, through purchase of energy efficient equipment and parts, and, most importantly, by implementing effective user-oriented energy conservation awareness programs.

3.2.2. Reduce Energy Used by the Mobility Forces. Mobility fuel energy consumption should be targeted for reduction but only when the reduction can be achieved without degrading capability. Programs to reduce consumption, exclusive of tactical operations, may be implemented after a complete evaluation by commands involved.

3.2.3. Use Alternative Energy: Consider the most life cycle, cost-effective energy conservation alternatives for facilities and operations. Reduce use of petroleum fuels and convert to other fuel sources when economical (note: sometimes public law or executive orders require conversion to alternative fuels irrespective of economic benefits).

3.3. Energy Plan Strategy. The program developed by the Air Force to support energy program objectives covers two broad areas - mobility operations (including aircraft and vehicle operations) and installation operations. Specific policies and responsibilities for the Air Force energy program are provided in AF Policy Directive 23-3. The Air Force uses energy awareness to keep all personnel focused on energy conservation and reducing energy costs.

4.0. Air Force Energy Management Organization and Responsibilities. Responsibilities for energy management are promulgated by AFD 23-3. HQ USAF is responsible for overall program management, and establishes goals and policies and provides general guidelines. The MAJCOMs, SOAs, and DRUs are responsible for policy execution and compliance. HQ USAF is also responsible for coordinating with the Secretary of Defense staff concerning the development of DoD policy and legislative initiatives.

4.1. Organization.

4.1.1. The Department of Defense and Air Force Energy Programs management structure is illustrated in Attachment 3.

4.1.1.1. The Headquarters USAF Energy Management Steering Group (EMSG) provides top-level management oversight of progress made in implementing the strategies for achieving the target goals for FY00 and FY05. Members of the EMSG include representatives from HQ USAF/XOO, HQ USAF/CEO, HQ USAF/LGT, HQ SAF/FMBO, HQ SAF/PA, HQ AFCEA/CESE, and the MAJCOMs. The EMSG will convene semiannually to review energy consumption reports to OSD and to review the progress toward meeting the facility and mobility energy use goals.

4.2. Responsibilities.

4.2.1. HQ USAF. The Director of Supply, DCS/Logistics (AF/LGS), is the overall manager of the Air Force energy program. AF/LGS is the agency responsible for developing, reviewing, and coordinating Air Force energy planning from a policy

standpoint. Specifically, the Director of Supply is the chairperson of the Air Force Energy Management Steering Group (EMSG) and a member of the Defense Energy Policy Council (DEPC). In addition, the Director of Supply serves as an energy adviser to the Secretary of the Air Force through the Assistant Secretary for Manpower, Reserve Affairs, Installations, and Environment (SAF/MI).

4.2.1.1. Supply/Fuels Policy Division, Directorate of Supply, DCS/Logistics (AF/LGSP). The Supply/Fuels Policy Division functions as the Air Force Energy Office, which is the principal coordinating office for all energy matters in the Air Force. The Energy Office gives energy planning and management support to the Secretary of the Air Force and the Air Force chief of staff. The Air Force Energy Office is responsible for developing and publishing specific Air Force energy goals and providing general guidance for energy saving measures. AF/LGSP is a primary participant in the Air Force working group on Alternatively Fueled Vehicles.

4.2.1.2. The Office of the Civil Engineer (AF/CE). AF/CE assists AF/LGSP by overseeing the facility energy management program. This includes policy and goal development, distribution of funds identified in Defense Management Review Decision (DMRD) 907 and Program Budget Directive (PBD) 770. The focal point within AF/CE for all Air Staff actions relating to installation energy is AF/CEO. The Air Force Civil Engineer Support Agency (AFCESA) assists AF/CEO on all aspects of the facility energy program, especially implementation and assistance support to the MAJCOMs and bases. AFCESA monitors facility consumption and cost data through the Defense Utility Energy Reporting System (DUERS). Monthly data from consuming organizations are reported quarterly to DOD. The AFCESA monitors MAJCOM, FOA, and DRU progress toward meeting utility energy goals by analyzing energy use, advising CEO of energy management results, and coordinating through command channels or with functional managers to improve results where possible. AF/CEO is responsible for providing AF/LGS with the consolidated Air Force inputs for the Annual Report to Congress on Energy Management and Conservation. General reporting requirements are summarized in Attachment 4. The Facilities Energy Program Execution Strategies are summarized in Attachment 5. The Energy Policy Act of 1992 requires energy managers at all installations to be trained. HQ AFCESA and the Air Force Institute of Technology Civil Engineering School conduct frequent training seminars to meet this requirement.

4.2.1.3. The Vehicle Operations and Maintenance Division, Directorate of Transportation, DCS/Logistics (AF/LGTV). AF/LGTV is the policy focal point for all issues concerning vehicle operations, maintenance, and the environment. This office chairs the Alternatively Fueled Vehicle Policy Working Group (AFVPWG), made of functional representatives throughout the Air Staff. The AFVPWG is responsible for developing specific guidance promulgating an Air Force alternative fueled vehicle program.

4.2.1.4. The Combat Support Division, Directorate of Supply, DCS/Logistics (AF/LGSR). AF/LGSR is responsible for oversight of Air Force vehicle procurement. The Air Force is aggressively acquiring Alternatively Fueled Vehicles (AFVs) to reduce our Nation's dependence on imported oil and protect our environment as required by the Energy Policy Act of 1992 and the Clean Air Act of 1990. AFVs will be assigned on a priority basis to units located in non-attainment areas as defined by the Clean Air Act. When insufficient AFVs are available from the auto manufacturers to meet the mandates of EPACT, late model vehicles currently in the inventory may be converted to operate on alternative fuels. The Alternative Fueled Vehicle System Program Office (AFVSPPO) was established to coordinate MAJCOM efforts to comply with legislative requirements regarding AFVs. AF/LGSR/LGSP/LGTV/CEVV participate in the Interagency Committee on Alternative Fuels and Low Emission Vehicles.

4.3. **MAJCOMs/FOAs/DRUs.** MAJCOMs/FOAs/DRUs develop plans to support or supplement Air Force goals and strategies, execute programs (includes programming funding to support the various energy program mandates), evaluate energy usage of subordinate units, provide inputs required by HQ USAF for annual reports and nominate their most successful units for energy awards.

4.4. **Installations.** Installations should develop plans to support or supplement Air Force and MAJCOM goals/strategies, execute those plans, measure and evaluate their base energy usage, provide inputs required by their MAJCOM for annual reports, and nominate their most successful people and units for energy awards

4.5. **Energy Management Steering Group.** Each level of command - HQ USAF, MAJCOM, and base is responsible for establishing an EMSG, composed of representatives from all major energy managing activities, including civil engineering, public affairs, transportation operations, budget, aircraft maintenance, logistics, and fuels management. The steering group provides a forum for coordinating energy activities and for conducting the Air Force energy program. EMSGs should be chaired by the commander or vice commander, in accordance with AFRD 23-3.

5. Energy Program Reviews. Air Force energy program progress is reviewed in conjunction with the DEPC, consisting of representatives from the military departments and other DOD agencies. The DEPC integrates the annual DOD energy program review, manages ECIP-FEMP Projects, and coordinates certain presidential report requirements into the DOD PPBS. Each year, OSD and the military components conduct a formal energy program review. In preparation for this review, the Air Force updates its energy management planning and summarizes progress toward meeting the goals.

6. Energy Awareness Program. The energy awareness program goal is to encourage all personnel to use energy efficiently, both at work and at home, without degrading operational readiness, and to recognize and reward excellence in energy conservation. The program reflects a long-term commitment by the Air Force to expose individuals to the energy climate, educate them about the direct relationship between energy and national security, and maintain their interest in conserving energy by continuously publicizing energy goals and achievements.

6.1. Energy Conservation Award. The Air Force uses the Department of Energy (DOE) Awards Program to recognize its people and organizations for their accomplishments in the energy and water conservation area. This program is covered under AFI 36-2818, USAF Logistics Award Program. AF/LGSP issues a nomination call each year following release of DOE nomination criteria.

7.0. Energy Security. Each base EMSG is required to determine the installation's vulnerability to energy interruptions. They should assure the base's existing plans, covered in AFI 10-210, *Civil Engineer Contingency Response Planning*; AFI 32-4001, *Disaster Preparedness Planning and Operations*; *Disaster Preparedness Operations Plan 32-1*; and AFI 32-2001 *Fire Protection*, cover these vulnerabilities. Each base EMSG should annually review all plans to ensure a description of actions to be taken to minimize prospective impacts in response to a serious interruption of energy supply that may occur at the local, state, or national level. (The plans must address vulnerabilities of Air Force missions and facilities due to natural disasters, major system failures, energy supply constraint disputes, and terrorist sabotage.). These plans should identify types of energy critical to base operation, energy suppliers, alternative sources and procedures for obtaining emergency supply. The assessment includes an indication of the extent of the delay that can be allowed for critical programs and operations as well as points at which the primary base mission can no longer be accomplished. Control and feedback mechanisms for managing an energy emergency situation should be summarized in these plans. Base requirements should be coordinated with the local utilities and community disaster plans.

8. Energy Management Reporting. Facility energy consumption is monitored through the Defense Utility Energy Reporting System (DUERS). The DUERS is the primary data base for facility energy analysis. Analysis of the DUERS data helps the DOD managers to make energy policy, look at energy related problems and anticipate those requiring early action, provide reporting to DOE, and measure energy management achievements.

8.1 Reporting Systems. Facility energy consumption is reported separately from mobility energy consumption:

8.1.1. The DUERS gives information on the consumption and cost of energy resources (electricity, fuel oil, propane and LPG, natural gas, coal, purchased steam and water) used to furnish utility services to DOD installations. These data are collected by HQ AFCEA/CES and forwarded to ODUSD (IA&I) (E&E) after coordination with AF/CEO. DUERS reports are forwarded by each base/wing to HQ AFCEA through MAJCOMs. MAJCOMs are responsible for ensuring the accuracy of the report, monitoring energy use regularly, and providing feedback to subordinate units as required.

8.1.2. DLA is responsible for reporting mobility fuel consumption.

9. Energy Research and Development. HQ USAF, guided by SAF/AQ, is responsible for managing all Air Force research and development activities. Because energy R&D must encompass a variety of functional areas - aircraft, vehicle, and installation operations - responsibility for carrying out energy R&D projects is divided between the Wright Laboratories (WL) and the Phillips Laboratory (PL). The WL is located at Wright Patterson AFB, OH, and is the lead laboratory group for general operations energy R&D.

9.1. Energy R&D Goals: Although the USAF desires to conserve energy, the primary goal of USAF energy research and development is the improvement of mission capability. But through the process of improving mission capability, energy conservation occurs as a byproduct of improved fuels, fuel usage, and vehicles. Examples of improved mission capability are the development of more fuel efficient turbine engines and reduced drag of airframes to improve fuel efficiency.

OPR: HQ USAF/LGSP (Maj Marsha Davis)

Attachment 1

USAF ENERGY MANAGEMENT GOALS

ENERGY CONSUMPTION

	FY20001	FY20052
Facilities - Consumption		
1. Buildings	20%	30%
1. Process/Industrial Use		20%
Mobility Fuels - Efficiency		
1. Aircraft Ops		Note 3
1. Admin. Vehicles		
Mobility Fuels - Consumption		
1. Admin. Vehicles		Note 3

ALTERNATIVE FUELED VEHICLE USE

	FY96	FY97	FY98	FY99
Applicable Light-Duty Vehicle Acquisitions	25%	33%	50%	75%

NOTES:

1. Goals are measured against the FY85 baseline.
2. Goals are measured against the FY85 baseline-except for industrial facilities that are measured against an FY90 baseline.
3. Current executive guidance for mobility conservation goals expired after FY95. DoD Interagency Energy Council is expected to develop new DoD mobility energy conservation goals for all services.

NOTE: The Energy Policy Act of 1992 (Public Law 102-486) requires all federal agencies to reduce facility energy use by 20 percent by FY00 in terms of British Thermal Units per square foot (BTUs/SF) over a FY85 baseline. Executive Order (EO) 12902, 8 March 1994, further directs all federal agencies to reduce overall consumption in federal buildings and facilities by 30 percent by FY05 in terms of BTUs/SF over a FY85 baseline. The EO also establishes a separate goal for industrial process

energy, a 20 percent reduction per unit of production by the year 2005 over a FY90 baseline.

Attachment 2

AIR FORCE ENERGY USAGE (IN TRILLIONS OF BTUs)

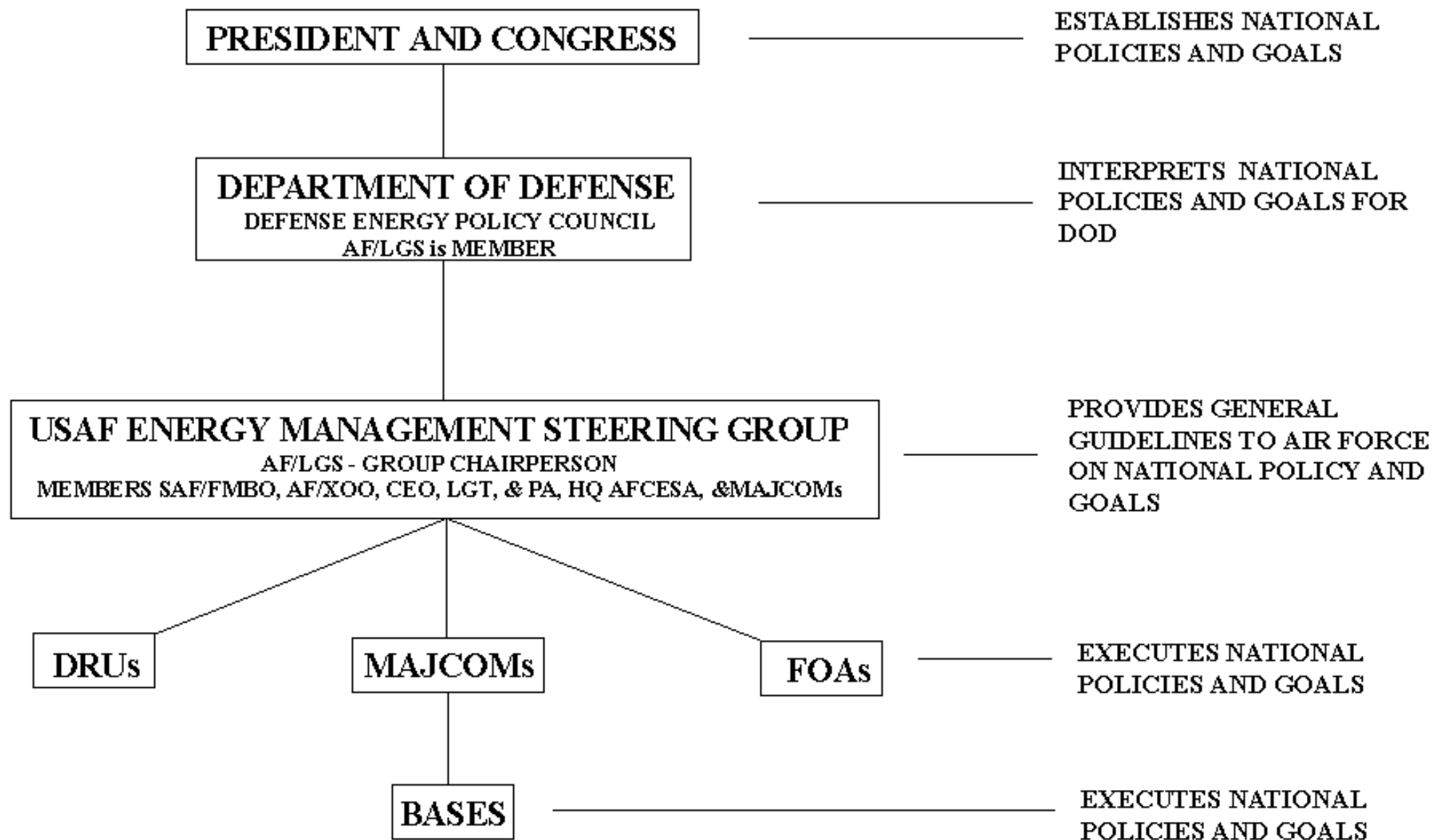
Function/Fuel Type	FY85 (Baseline)	FY90	FY91	FY92	FY93	FY94	FY95
Aircraft Operations	541.0	539.3	534.3**	463.2	399.2	286.2	395.8
Vehicle and Ground Operations	9.6	5.6	5.5**	4.9	1.9*	1.7*	1.7*
Installation Operations	110.6	112.0	108.1	105.7	101.7	96.0	87.6
Total	661.2	656.9	647.9	573.8	502.8	383. 9	485.1
Conversion Factors							
Aircraft Fuel:		5,548,000 BTU/barrel					
Vehicle Fuel:		5,133,689 BTU/barrel					
Installations Ops:		5,800,000 BTU/barrel					
* CONUS vehicle consumption.							
** Excludes Desert Shield/Storm.							

NOTE: Consumption History. In FY95, the Air Force used almost 500 trillion BTUs of energy. The Air Force's energy usage is a result of three major functions: aircraft operations (79 percent), vehicle operations (1 percent), and installation operations (20 percent). While the use of mobility fuels in aircraft operations is by far the majority of the Air Force's energy usage, it is driven mostly by mission and operational requirements. Figures 1 and 2 show the recent decline in the consumption of mobility and utility energy Air Forcewide. In wartime and crisis situations, the energy consumed from mobility fuels usage will increase significantly and is not comparable to a baseline derived in peacetime. Thus, it is important to remember that the success of the energy management program is not only how much less can be consumed under comparable conditions, but rather how efficiently and how economically we are using energy resources. Energy management will strive to make mobility energy use more efficient during all operational periods of peace, crisis, and war. The focus of energy management efforts on the Air Force's next major user, installation operations, will be to reduce consumption per square foot and to improve the efficiency of the industrial-type facilities. The Air Force spends almost \$1 billion on energy for installations, more than 4 percent of its operation and maintenance (O&M) budget.

Attachment 3

DoD and USAF ENERGY PROGRAM MANAGEMENT STRUCTURE

ENERGY MANAGEMENT STRUCTURE



Attachment 4

ANNUAL ENERGY REPORT FORMAT

III. NARRATIVE INFORMATION FOR THE ANNUAL REPORT

A. Information Required by NECPA

Each agency is requested to provide a short narrative statement on its activities undertaken and progress made in meeting the requirements of

- *Section 543(a).*

Section 543(b).

This narrative should include the following:

1. *A description of activities to prepare or update agency plans required by Section 543(d)(1) of NECPA:*
2. *A description of funding and performance of energy surveys and applied energy conservation measures to meet the requirement.*
3. *A description of operations and maintenance procedures utilized to increase energy efficiency:*
4. *A Description of how the agency has taken advantage of:*
 - *energy savings performance contracts authorized under Title VIII of NECPA,*
 - *financial incentives and other services provided by utilities for efficiency investments, and*
 - *other forms of financing to reduce the direct costs to the Government.*

Energy Savings Performance Contracts (Formerly Shared Energy Savings Contracts). Each agency is requested to provide information on its fulfillment of Section 546 of NECPA, including agency progress in entering into energy savings performance contracts and the use of cost savings generated by these contracts. Reporting should identify the following:

1. *Agency management structure responsible for implementing a program to enter into energy savings performance contracts;*
2. *The procedures used by the agency to verify anticipated and actual energy and cost savings associated with the energy savings performance contracts;*
3. *The number of energy savings performance contracts currently in place;*
4. *The annual and cumulative energy and cost savings resulting from the energy savings performance contracts;*
 - *Annual energy savings:*

Annual cost savings:

Cumulative energy savings:

Cumulative cost savings:

5. *The procedures the agency established to utilize on a fiscal year basis, and the cost savings resulting from energy savings*

performance contracts;

6. *The use of the energy and cost savings;*

7. *The problems and difficulties encountered in entering into energy savings performance contracts.*

8. *Recommended solutions to difficulties encountered in entering into energy savings performance contracts or establishing an incentive program in the agency.*

B. Information Required by Executive Order 12902

Each Agency is requested to provide a short narrative statement on the status of implementation activities for each of the following sections of Executive Order 12902.

Section 301. Energy Consumption Reduction Goals.

1. *Each agency shall report on its activities to develop and implement a program (or update its plan required by Section 543(d)(1) of NECPA) to attain the goal of reducing energy consumption by 30 percent by the year 2005, based on energy consumption per-gross-square-foot or its buildings.*
2. *Each agency shall report on its activities to develop and implement a program for its industrial facilities in the aggregate with the intent of increasing energy efficiency by at least 20 percent by the year 2005 as compared to the 1990 benchmark, to the extent these measures are cost-effective, and shall implement all cost-effective water conservation projects.*

Section 302. Energy and Water Surveys and Audits of Federal Facilities.

1. *Prioritization Surveys.*
2. *Comprehensive Facility Audits.*

Section 303. Implementation of Energy Efficiency and Water Conservation Projects.

Section 304. Solar and other Renewable.

Section 305. Minimization of Petroleum-Based Fuel Use in Federal Buildings and Facilities.

Section 306. New Space

Section 307. Showcase Facilities.

1. *New Building Showcases.*
2. *Demonstrations in Existing Facilities:*

Section 503. Performance Evaluation.

Section 504. Incentive Awards.

Section 507. Procurement of Energy Efficient Products by Federal Agencies.

C. Other Information Requested for the Annual Report to Congress.

- *Federal Agency Energy Management Training;*

Environmental Impact

Attachment 5

FACILITIES ENERGY PROGRAM EXECUTION STRATEGIES

STRATEGY 1. IMPLEMENTATION AND MEASUREMENT. This strategy is oriented to establishing or renewing command energy conservation plans. It requires actions to establish plans and develop procedures to maximize benefits.

STRATEGY 2. IMPROVED OPERATIONS AND MAINTENANCE. This strategy is intended to improve operations and maintenance of facilities, energy and water systems, including improved operator and facility manager training.

STRATEGY 3. LIFE-CYCLE COST-EFFECTIVE CAPITAL INVESTMENT (ECIP/FEMP). This strategy is intended to serve as "seed" money for energy conservation efforts.

STRATEGY 4. PARTICIPATION IN INNOVATIVE PUBLIC UTILITY PROGRAMS. This strategy is intended to emphasize the use of services provided by the local utility company.

STRATEGY 5. ENERGY SAVINGS PERFORMANCE CONTRACTS (ESPC). This strategy is intended to emphasize the use of services provided by the private sector.

STRATEGY 6. USE OF ENERGY EFFICIENT GOODS AND SERVICES. This strategy is intended to encourage the use of energy efficient building components, lighting systems, office equipment, etc.

STRATEGY 7. CERTIFYING NEW BUILDINGS FOR ENERGY EFFICIENT DESIGNS. This strategy is intended to assure new construction and major retrofits are designed and built with energy efficiency in mind.

STRATEGY 8. USING ALTERNATIVE, RENEWABLE, AND CLEAN ENERGY. This strategy is intended to encourage the use of alternative, renewable, and clean energy sources when they are cost effective and do not impact mission.

STRATEGY 9. WATER CONSERVATION. This strategy is intended to encourage water conservation from the consumption and energy saving standpoint.

STRATEGY 10. BALANCING ENERGY AND ENVIRONMENTAL GOALS. The purpose of this strategy is to coordinate energy and environmental activities. Take credit for energy projects that reduce or prevent pollution and document the impact on the energy program from meeting environmental requirements.
